

CHM 2211L – Organic Chemistry Laboratory (2 credits)

Room 210 Joseph Hernandez Hall

Spring 2020

- Teaching Assistant** to be assigned during first laboratory meeting
- Faculty Coordinator** Dr. Tammy A. Davidson, Sisler 429B
(352) 392-9134, davidson@chem.ufl.edu
Please use your official UF email for any correspondence
- TA Office Hours** See Canvas site for schedule (<http://elearning.ufl.edu>)
- Prerequisites** The prerequisite for CHM2211L is completion of either CHM2210 or CHM 2212 with a grade of C or higher, or completion of CHM3217. Please note that CHM2211L is intended to accompany CHM 2211/2213, and we expect that you have a good working knowledge of the material covered in those lecture courses. Any students taking CHM2211L without concurrent registration in CHM2211/2213 (or prior completion) should be prepared to do outside work as needed to understand these concepts.

CHM 2211L meets twice a week in room 210 of Joseph Hernandez Hall. The general objectives of this course are to introduce you to common laboratory techniques and equipment used in an organic chemistry laboratory, to help you gain understanding and proficiency in their use, to help you explore the process of doing organic chemistry, and to illustrate representative examples of the useful and important reactions you are learning in CHM 2211 lecture.

LABS BEGIN ON WEDNESDAY, JANUARY 15 (ATTEND YOUR SCHEDULED SESSION)

On the first day of lab, you must have the following items with you in order to check in:

- Lab Manual, 2019-2020 edition (Hayden-McNeil, available at UF bookstores)
- Approved Safety Glasses/Goggles
- Proper Attire

You must be wearing department approved safety glasses or goggles and be properly attired to be admitted to the laboratory at all times, even on the first day of lab. Students should wear loose fitting pants and a shirt (with sleeves) that covers the entire torso. There can be no exposed skin at the waist or ankle area. Please refer to the lab manual and the links on the Canvas site for more information on attire and the types of eye protection approved for use in this lab. Anyone without the necessary materials (listed above), the proper safety glasses, or who is inappropriately attired will not be allowed in the lab.

FIRST DAY OF LAB – CHECKING IN

On the first day of lab, you will be assigned to a lab bay, meet your TA, and be assigned to your laboratory workstation. You will need to choose a PIN for the lock on your personal workstation drawer. Be careful and deliberate when entering the code to lock your drawer – you will need to use the same PIN to unlock your drawer, so be careful to enter the code correctly when you lock the drawer.

The Materials and Supplies fee that you pay for this course (\$88) covers all reagents/supplies and reasonable breakage/loss of glassware. You are responsible for maintaining all of the glassware and equipment in your personal workstation drawer for the entire semester. Check everything carefully during check-in to make sure all of your equipment is in good working order. Look for star and hairline cracks in your glassware, and check your separatory funnel carefully to make sure there are no leaks. Complete and sign the Safety Form and workstation equipment sheet (found in the "Forms" section of the Lab Manual), and turn them in at the stockroom window to complete the check-in process.

******NOTE: No students will be permitted to check into the lab after January 24******

GRADING

Your grade will be determined primarily from two sources in this course. The first area is preparation/experimental work done in the laboratory – completion of your pre-lab assignments, your participation in lab discussions, the data and observations that you record in your notebook during lab, the notebook summaries you submit to your TA on completion of the experiment, and your TA's evaluation of your general work habits and attitude. This experimental portion of your grade will be combined with assessment of your understanding of the experiments (both technical and the background chemistry) as evaluated on quizzes and the lab practical. Although it is natural to worry about grades, please don't let it become an obsession that ruins your experience in the lab. The average grade for this course is a B+, and any student who completes all of the assignments and shows a good attitude in the class will earn at least a C.

Grades will be determined from the following factors and weighted as indicated:

<u>Experimental work</u>		<u>Assessment of Understanding</u>	
Pre-Lab	10%	Safety Quiz	5%
Lab Notebook/Summaries	15%	Midterm and Final Quiz	45%
Participation/TA evaluation	3%	Lab Practical	20%
Checkout Day	2%		

The grading scale will be firmly set as follows: A \geq 89.5%, A- = 86.5-89.4%, B+ = 83.5-86.4%, B = 76.5-83.4%, B- = 72.5-76.4%, C+ = 69.5-72.4%, C = 61.5-69.4%, C- = 58.5-61.4%, D+ = 54.5-58.4%, D = 50-55.4%, E < 50.0%. There will not be a curve beyond that already included in the scale above, and there is no rounding to scores in Canvas. UF grading policies are at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Explanation of Grade Breakdown:

The **Pre-Lab (PL)** grade consists of your Pre-Lab Assignments which are found in the lab manual for each experiment and are graded on a 5 point scale for completion. Turn in the pre-lab to your TA at the beginning of the lab session. Anyone who has not completed a pre-lab may not do the lab that day.

Lab Notebook/Summaries (NB) are to be submitted to your TA for each experiment done during the semester and will be graded on a 10 point scale for completion. These consist of the notes you take during lab and your answers to the post-lab questions from the lab manual. The duplicate pages from your notebook are due to your TA at the beginning of the lab period that immediately follows completion of the experiment. Your score on the online **Spectroscopy Module Quiz** will also count as a notebook grade. See the schedule for specific dates.

Various assessments that gauge your understanding of the course material are dispersed throughout the semester – see the schedule for specific dates. An **Online Safety Quiz** will be available on Canvas under the Quizzes tab. The **Midterm Quiz** and **Final Quiz** will be given during evening assembly exam slots and will evaluate your cumulative understanding of the concepts/techniques covered in the lab. The **Lab Practical** will assess your ability to determine a melting point range for an unknown compound accurately and your ability to carry out a synthesis and recrystallization using a procedure that was performed earlier in the semester. More details about the practical will be given as the exam date approaches. *****Note: The online safety quiz must be completed on the Canvas site by 11:00pm on Friday, January 31. No extensions.*****

The Organic Teaching Laboratory is a hands-on learning environment. The **Participation/TA evaluation** portion of your grade will be determined based on your overall engagement in the laboratory and your contributions towards the discussion aspects of the lab.

The **Checkout Day** is an official class meeting, and we need everyone to be in attendance. We will hold 2% of your grade until you have completed the checkout process. Anyone who misses checkout for an unexcused absence or has not made prior arrangements with the stockroom will forfeit these points.

SCANTRON GRADING AND REQUESTS FOR REGRADES

The Midterm and Final quizzes will be 25 question multiple choice Scantron assessments and must be completed using a pencil. Bubbling errors will not be negotiated. Additionally, a 2 point penalty will be applied for failure to bubble in a correct UF ID number or for a missing or incorrect form code. Any grading disputes must be performed within two weeks of the scheduled quiz date.

Regrade requests for the Lab Practical must be submitted on a regrade request form (available at the lab stockroom) by the deadline listed in the lab schedule. **Requests for re-grades will not be accepted after the deadline has passed.** The Lab Practical is graded immediately after submission using the same grading rubric for all samples, which ensures consistent evaluation of sample mass and crystal quality. Please note that the purpose of a regrade is to make sure papers were graded properly according to the rubric – it is not a means to negotiate for more points. Regrade requests concerning refills, late penalties, or the signature of the TA proctor will not be considered. **All re-grade decisions are final.**

LAB CLEANLINESS AND LATE PENALTIES

You are expected to attend your scheduled lab session, complete the scheduled activity, clean up your work area, and leave the lab when your lab period ends. Everyone in this course is given the same amount of time to complete the experiments. If you are well prepared, you should have no problem finishing the experiments within the allotted time. **You may not stay late or come in during another lab section to do your experiments.**

You will find a schedule at the end of this syllabus that shows this semester's experiments, along with the dates of quizzes and due dates for assignments. The following late penalties will be assessed as needed:

Late leaving the lab or messy workstation.....0.5 point deduction from Participation grade per occurrence
Any assignment turned in late.....10% deduction on item for each day late

ATTENDANCE, MISSING LAB, AND DROPPING THE COURSE

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the Undergraduate Catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

This is a hands-on course, and regular attendance in the organic lab is critical to your understanding and overall success. Each laboratory period, you will learn techniques and concepts that will continue to be important throughout the semester. It is essential that you arrive at the lab on time and prepared for the activity each time that lab meets. Due to space and time constraints, **there are no makeup labs in this course. You may not come in during a different lab period to do any experiments.** Therefore, it is important for you to attend your regularly scheduled lab session. Your TA will be taking attendance during each lab period.

Students who must miss lab due to **extreme circumstances beyond their control** may submit a Request for Excused Absence. In general, acceptable reasons for absence from class include illness, serious family emergencies, court-imposed legal obligations (e.g., jury duty or subpoena), special curricular requirements (e.g., judging trips, field trips, professional conferences), military obligation, severe weather conditions, religious holidays, and participation in official university activities such as music performances, athletic competition or debate. Please understand that personal issues with scheduling conflicts, such as work, non-emergency dentist or doctor appointments, extracurricular activities, family vacations, etc., do not justify an excused absence. To have a request considered for approval, you must provide written, verifiable documentation (a doctor's note, University excuse, funeral program, etc.) along with a completed request form (available on the Canvas site) to the stockroom window. The stockroom will forward your request on to Dr. Davidson for review. Please do not email Dr. Davidson to "preview" if your absence will be approved or not. All requests for excused absences must be made no later than 1 week after the absence – after one week, the absence will be considered unexcused. Unexcused absences from lab will result in a grade of zero for the work missed. You are responsible for any information presented in the lab even if you are absent. If you know in advance that you will have to miss a lab session, for instance due to a UF-sponsored activity or observation of a religious holiday, please submit your paperwork as soon as possible.

Please note: If you miss a quiz or the lab practical, you must contact Dr. Davidson within 24 hours of missing the assessment to request a make-up.

A NOTE ON TEAMWORK AND PARTICIPATION

Teamwork is an integral component of doing science. In today's world, researchers depend on collaboration with their colleagues to share ideas, spark creativity, maximize strengths, troubleshoot problems, and share limited resources. The days of lone scientists toiling away in lab by themselves are over. Teaching labs are no exception. The organic lab is an ideal place to exemplify the benefits of working together towards a common goal. Teamwork allows us to explore more sophisticated chemistry and develop a deeper understanding of what is happening in our experiments through active discussion.

You will see that our pre-lab discussions will be done in small teams, and many of our experiments are conducted while working with a partner. The goal of this approach is that everyone participates in the process, and that can only happen if you are prepared when you come to lab. Members of the team are expected to contribute equally, and your TA will be evaluating your participation and that of your teammates throughout the course.

PRE-LAB ASSIGNMENTS AND LABORATORY NOTEBOOK/SUMMARIES

Before you come to lab, carefully read through the scheduled experiment and complete your Pre-Lab Assignment (the colored sheet found after each experiment in the lab manual). These Pre-Lab Assignments are designed to ask you to think about the lab procedure to be performed, understand how it relates to other aspects of chemistry, and guide you in your preparation for the experiment. You may need to refer to your lecture text to help you answer some of the questions. Don't wait until just before lab to get prepared – instead, work on your Pre-Lab ahead of time so you can ask your TA for help if you are confused about anything. Turn your pre-lab assignment in to your TA at the beginning of the lab period. No one will be permitted to do the lab without a completed Pre-Lab assignment – your TA will ask you to leave the lab. Additionally, you will find that the labs will go much smoother if you have read through everything ahead of time, so be sure to do a good job in getting organized. (Please don't sit in the hallway outside the lab and copy the pre-lab from your classmates. It just makes you look extremely unprepared and not very serious about your coursework.)

Your laboratory notebook is meant to be an accurate, legible, permanent record of everything that you do in the laboratory. Use the carbonless duplicate sets at the back of your manual, and start each new experiment on a fresh page. Include the title of the experiment, the chemical reaction that is being performed (if applicable), any physical data that is needed in the experiment (such as molar masses, melting points, boiling points, and densities), and any important safety alerts. While you are conducting an experiment, write everything in your notebook. Record your activities (a brief procedure – does not need to be complete sentences) and all data (weights, volumes, reaction times, melting or boiling points, calculations, etc.) and observations (colors, textures, odors, visual indications of reaction, etc.) directly into your notebook as you do your experiment. When you have finished the experiment, you should include a brief summary of your results and make any conclusions that can be drawn from your data. Also, be sure to answer the post-lab questions in your notebook. You will turn in the duplicate pages from your notebook to your TA at the beginning of the lab period immediately following completion of the experiment.

Be sure to consider the following items when preparing your notebook:

- The notebook must be kept in non-erasable, waterproof ink (preferably ballpoint)
- All errors must be crossed out with a single line – no scribbles or white-out!
- Do not skip or tear out pages – cross out with an X if the entire page is incorrect
- Experiments must have titles and include the dates that they are performed
- Include the names of your teammates (if applicable)
- There should be enough detail so that someone with a reasonable understanding of organic chemistry (like your TA) could repeat your work using only your notebook
- Accuracy and truth are more important than a “pristine” entry
- All entries must be made while the experiment is conducted and the duplicate pages must be turned in to the TA for grading after completion of the experiment – see the schedule for due dates

CELL PHONES, CALCULATORS, AND OTHER ELECTRONIC DEVICES

Cell phones and other personal electronic devices are not permitted for use in the laboratory at any time. All cell phones and other devices must be silenced and stored in your storage locker in your bay. If you must make an emergency call during the lab period, please take your phone into the hallway outside of the lab. When you finish, please return your phone to your locker. **NOTE:** You will need to use a calculator many times during this course. You should bring a calculator with you to class – we will not let you use the calculator on your cell phone.

ASSEMBLY EXAM CONFLICTS

Some students enrolled in evening laboratory sections may experience conflicts with their scheduled laboratory session and assembly exams in other courses. The official timeslot for assembly exams during the fall/spring term is for periods E2-E3 (8:20-10:10 pm)**. You are expected to attend your organic lab until 8:00 pm on the evening of an assembly exam. (Many times, you may be able to finish what you need to do that day without any trouble.) Please let your TA know if you have an assembly exam coming up so he or she can assist you with planning your activities in the lab. The lab instructors for the evening sessions will discuss this further with you during check-in day. Please do not complete a request for approved absence form for an assembly exam given periods E2-E3.

**Any other exams that are scheduled for outside of their normal class time, but not in an official assembly exam block, are not considered to be assembly exams by the university. We are not required to accommodate test conflicts if they are not official assembly exams as scheduled through the registrar's office. Please discuss makeup exam options with your instructor in the other course before requesting accommodations for this lab.

ACADEMIC HONESTY GUIDELINES

The University of Florida holds its students to the highest standards, and we encourage students to read the University of Florida Student Honor Code and Student Conduct Code (Regulation 4.040), so they are aware of our standards. Any violation of the Student Honor Code will result in a referral the Student Conduct and Conflict Resolution and may result in academic sanctions and further student conduct action. The two greatest threats to the academic integrity of the University of Florida are cheating and plagiarism. Students should be aware of their faculty's policy on collaboration, should understand how to properly cite sources, and should not give nor receive an improper academic advantage in any manner through any medium. You can find more information about UF's Academic Honesty Policy from the Dean of Students Office website at <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>.

INFORMATION FOR STUDENTS WITH DISABILITIES

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <http://www.dso.ufl.edu/drc/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester. Note that DRC accommodations cannot be applied retroactively.

EVALUATIONS

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

SCHEDULE OF EXPERIMENTS – CHM2211L – SPRING 2020[†]

Date	Activity	Items Due/Notes
January 15, 16, 17	Check-in, First Day Activities (read pgs. v-xv and Chapter 1 in manual and watch Lock Operations videos in Modules area on Canvas before coming to lab) <i>Chapter 2: Introduction to Melting Point</i> – view video in “Modules” tab before lab (Note: Section O1L7 (10939) will not meet on Friday, January 17)	
January 20, 21	<i>Martin Luther King, Jr. Day Holiday – no labs (all sections)</i>	
January 22, 23, 24	<i>Chapter 4: Synthesis of Acetophenetidin, Part 1</i> (Note: Section O1L7 (10939) will not meet on Friday, January 24)	Acetophenetidin Pre-Lab (PL) due **Watch Glassware Cleaning and Support Rod/Clamps videos in Module area on Canvas**
January 24	****No students will be permitted to check in after this date****	
January 27, 28, 29a [§]	Acetophenetidin, cont., Part 2	
January 29p [§] , 30, 31	Acetophenetidin, cont., Parts 3 and 4 <i>Chapter 3: Identification of an Unknown using Spectroscopy</i> (view Spectroscopy module on Canvas before coming to lab)	Spectroscopy PL due
January 31	*Online Safety Quiz Due at 11:00 pm – no extensions	
February 3, 4, 5a	<i>Chapter 5: Extraction</i> (Parts 1 and 3)	Extraction PL due Acetophenetidin NB due
February 5p, 6, 7	Extraction, cont. (Part 2)	
February 10, 11, 12a	Extraction, cont. (Parts 4 and 5)	
February 12p, 13, 14	<i>Chapter 9: Extraction and TLC of Pigments in Spinach</i>	Spinach PL due Extraction NB due
February 17, 18, 19a	<i>Chapter 8: Electrophilic Aromatic Substitution</i>	EAS PL due Spinach NB due
February 19	Online Spectroscopy Module due at 11:00pm (counts as a NB grade)	
February 19p, 20, 21	<i>Chapter 10: Acetylation of Ferrocene</i> (Parts 1 and 2)	Ferrocene PL due EAS NB due
February 20, 8:20pm	*** ALL SECTIONS – Midterm Quiz *** – see Canvas site for room assignments	
February 24, 25, 26a	Acetylation of Ferrocene, cont. (Parts 3 and 4)	
February 26p- March 6	No labs (Spring Break)	
March 9, 10, 11a	<i>Chapter 6: Synthesis and Testing of Biodiesel, day 1</i>	Biodiesel PL due Ferrocene NB due
March 11p, 12, 13	Biodiesel, day 2 Clean glassware for Lab Practical	
March 16, 17, 18a	Lab Practical (during regular lab session)	
March 18p, 19, 20	<i>Chapter 12: Making Polymers and Chapter 13: Renewable Block Copolymers, Part 1</i>	Polymers PL due Biodiesel NB due

March 23, 24, 25a	Renewable Block Copolymers – Part 2	
March 25p, 26, 27	Renewable Block Copolymers – Part 3	Regrade Request Deadline: Lab Practical
March 30, 31, April 1a	<i>Chapter 7:</i> Synthesis of Fluorescent Coumarin Derivatives, Part 1 (each team makes both coumarins)	Polymers NB and Worksheet due
April 1p, 2, 3	Coumarins, Part 2 and discussion	
April 6, 7, 8a	<i>Chapter 13:</i> Dyes and Dyeing	Dyes Pre-Lab Coumarins NB due
April 8p, 9, 10	Checkout – Note: If you arrive late and your bay has already finished the checkout process, you will be billed a checkout fee.	Dyes NB due
April 13, 8:20pm	***ALL SECTIONS – Final Quiz*** – see Canvas site for room assignments	

[†]Schedule may change due to unforeseen events – see course Canvas site for any updates.

[§]NOTE: An “a” indicates labs beginning at 8:30am on Wednesdays, while the “p” indicates labs beginning at 11:45am or later on Wednesdays.

[‡] Available on the Canvas website beginning January 13. You must complete this quiz no later than 11:00pm on January 31. No extensions.